

90 Figuring Out Fossils



Many species have become extinct during the history of Earth. How can you know these creatures ever existed? The evidence is right under your nose—or your feet, to be more precise.

Our planet's thin outer layer, the crust, can be up to 40 kilometers (25 miles) thick. The crust is made up of many layers of rock that have been forming for over 4 billion years, and are still forming today. These rock layers can form when a volcanic eruption covers the land with lava, or when a flood spreads out a layer of mud. Lava, mud, or even sand can eventually harden into solid rock. New rock layers can also form over hundreds of years as



sediment—sand, dirt, and the remains of dead organisms—gradually settles on the bottom of a lake or ocean.

Any new layer of rock can seal off the layer below it. Organisms trapped within these sealed off layers can become part of the rock itself. Any trace of life preserved in a rock is called a **fossil**. It can be an entire organism, a part of an organism, a footprint, a piece of feces, or a piece of shell, bone, or tooth.

CHALLENGE



What can fossils tell you about organisms that lived in the past?

MATERIALS



For the class

8 containers of fossils



For each pair of students

1 hand lens



For each student

1 Student Sheet 90.1, "Fossil Observations"

PROCEDURE

1. Work in a group of four. Collect a pair of fossils. One pair in the group should begin by examining one of the fossil specimens, the other pair begins by examining the other specimen.
2. Work with your partner to identify the unique features of the fossil. Be sure to look at both specimens of the species. Use the magnifier to help you.
3. On Student Sheet 90.1, “Fossil Observations,” sketch the general shape and unique features of this type of fossil. Then record additional observations that are difficult to show in your sketch, such as color or size. Note that your group of four has two specimens of the same fossil. You can write observations on both of these specimens.
4. When directed by your teacher, exchange your pair of fossils with another group of four students.
5. Repeat Steps 1 through 4 until you have examined all eight types of fossils. As you continue to look at more fossils, observe similarities and differences among the different fossils.

ANALYSIS



1. Review your notes on the eight different types of fossils.
 - a. What can you infer about each of these? For example can you infer what habitat they lived in or whether they are related?
 - b. Explain, using evidence from this activity to support your answer.
 - c. What additional information would you like to have about the fossils?



2. In this activity, you were given a fossil to examine. What additional observations could you have made about the fossil if you had discovered it?



3. Choose one of the eight fossils you examined.
 - a. Based on the fossil, describe what you think this organism looked like when it was alive. Include your evidence for your description.
 - b. In what type of environment would you expect to find this organism? Explain your reasoning.
4. Although you probably have a vivid picture of dinosaurs in your mind, no one has ever seen a living dinosaur. All the evidence for the existence of dinosaurs comes from fossils.
 - a. What details about the appearance and behavior of dinosaurs do you think would be easiest to determine from fossils?
 - b. What details about the appearance and behavior of dinosaurs do you think would be hardest to determine from fossils?